

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**

## REMARKS

### I. Status of Claims

After entry of the above amendments, claims 1-58 are pending. Claims 1-2, 6-9, 16, 18, 22, 29-31, 38 and 40-41 were amended. To the maximum extent possible, all amended claims are intended to be interpreted exactly as if they had been originally presented in their amended form. New claims 42-58 were added to claim the invention more extensively without adding new matter. For efficiency in communication, claim rejections may be discussed below as if applied even to amended claims. Applicants traverse all rejections and request reconsideration.

Item 1 of the Office Action objected to claim 41 due to an informality (namely, a typographical error).

Item 2 quoted 35 U.S.C. §112 (hereinafter, "Section 112"), first paragraph.

Item 3 rejected claims 22-25 under Section 112, first paragraph as containing subject matter which was not [adequately] described in the specification, due to alleged lack of clarity regarding the meaning of the term "stainless steel-rich oxycarbonitrides layer".

Item 3 also quoted Section 112, second paragraph.

Item 3 also rejected claims 1-15 under Section 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The basis for this rejection is that a "substrate" was not recited.

Item 4 quoted 35 U.S.C. §102(b) (hereinafter, "Section 102(b)").

Item 5 rejected claims 1 and 9-16 under Section 102(b) as being anticipated by U.S. Patent No. 4,714,660 to Gates (hereinafter, "Gates").

Item 6 rejected claims 18, 26, 28-32 and 27 under Section 102(b) as being anticipated by U.S. Patent No. 4,599,281 to Schintlmeister (hereinafter, "Schintlmeister").

Item 7 rejected claim 22 under Section 102(b) as being anticipated by Japanese Patent Number 08-003750 (hereinafter, "JP'750"), of which only the

English-language patent abstract was capable of being reviewed by the undersigned.

Item 8 rejected claim 38 under Section 102(b) as being anticipated by Gates.

Item 9 rejected claims 40-41 under Section 102(b) as being anticipated by Schintlmeister.

Item 10 quoted 35 U.S.C. §103(a) (hereinafter, "Section 103(a)").

Item 11 rejected claims 2 and 4 under Section 103(a) as being unpatentable over Gates as applied to claim 1, and further in view of Government Paper Specification Standards (February 1999, No. 11, p. 65) (hereinafter, "Government Paper Standard").

A "first" item 12 rejected claim 17 under Section 103(a) as being unpatentable over Gates as applied to claim 1.

A "second" item 12 rejected claims 19-20, 27, 33, 34 and 36 under Section 103(a) as being unpatentable over Schintlmeister as applied to claims 18 and 26, and further in view of Government Paper Standard.

Item 13 rejected claim 23 under Section 103(a) as being unpatentable over JP'750 as applied to claim 22, and further in view of Government Paper Standard.

Item 14 rejected claim 5 under Section 103(a) as being unpatentable over Gates as applied to claim 1, and further in view of U.S. Patent Number 4,731,302 to Weissmantel (hereinafter, "Weissmantel").

Item 15 rejected claims 21 and 35 under Section 103(a) as being unpatentable over Schintlmeister as applied to claims 18 and 27, and further in view of Weissmantel.

Item 17 rejected claim 24 under Section 103(a) as being unpatentable over JP'750 in view of the Government Paper Standard.

Item 18 rejected claim 25 under Section 103(a) as being unpatentable over JP'750 as applied to claim 22, and further in view of Schintlmeister.

Item 19 rejected claim 39 under Section 103(a) as being unpatentable over Gates as applied to claim 38, and further in view of U.S. Patent No. 5,624,725 to Nelson.

Item 20 indicated that claims 6-8 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Item 21 indicated reasons for the indication in Item 20 of allowable subject matter.

Item 22 gave various contact information for the Examiner and for others in the U.S. Patent and Trademark Office (USPTO).

## II. The Office Action Failed to Acknowledge the IDS Filed with the Application

Applicants respectfully point out that the Application, as filed on October 16, 2001, was accompanied by an Information Disclosure Statement (hereinafter, "2001-10-16 IDS") that listed five references and that included copies of the five references. However, the Office Action did not acknowledge the 2001-10-16 IDS and its five listed references.

Applicants respectfully request that, in a next communication from the Examiner, the Examiner please acknowledge the 2001-10-16 IDS by including copies of the PTO/SB/08A form and the PTO/SB/08B form from the 2001-10-16 IDS, with each reference's listing initialed by the Examiner on the copies and with the copies signed by the Examiner.

If the Examiner decides to make any rejection based in any way on any of the five references from the 2001-10-16 IDS, then Applicants respectfully request that the next office action be non-final, in order to give Applicants a fair opportunity to respond to the rejections.

The five references from the 2001-10-16 IDS are:

- (1) U.S. Pat. No. 4,524,106 to Flasck;
- (2) U.S. Pat. No. 4,758,280 to Bergmann et al.;

- (3) Meng et al., "Growth of epitaxial aluminum nitride and aluminum nitride zirconium nitride superlattices on Si (111)", J. Vac. Sci. Technology A 10, pp. 1610-1617, 1992;
- (4) Beck et al., "Decorative hard coatings - new layer systems without allergy risk", Surface & Coatings Technology 61, pp. 215-222, 1993;
- (5) Kasori et al., "Effects of transition-metal additions on the properties of AlN", J. Amer. Ceram. Soc. 77, pp. 1991-2000, 1994.

A photocopy, stamped with the legend "COPY", is hereby enclosed of the receipt-confirmation postcard that accompanied the Application and that was "stamped" by the USPTO and returned to Applicants. The photocopy shows that the USPTO acknowledged receipt of the 2001-10-16 IDS, including its form PTO/SB/08A, its form PTO/SB/08B and copies of all listed references.

If the Examiner has any difficulty locating within the file wrapper the 2001-10-16 IDS, including copies of the five references, he is respectfully invited to call the undersigned for duplicate copies, prior to issuing any next office action.

### III. Claims 6-8 (Items 20-21): Indicated As Allowable

Item 20 of the Office Action indicated that claims 6-8 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 6-8 have been so amended solely to put them into the form indicated as being allowable. Accordingly, Applicants respectfully request that claims 6-8 be allowed. Claims 6-8, as amended, are unchanged in scope.

### IV. Claim 41 (Item 1): Informality

Item 1 of the Office Action objected to claim 41 due to an informality in which a word, "of", was repeated. Applicants thank the Examiner for his careful

review of claim 41. Claim 41 has been amended and no longer includes the objectionable typographical error.

V. Claims 22-25 (Items 2, part of 3): Section 112, 1st Para.; "stainless steel-rich"

Item 2 of the Office Action quoted Section 112, first paragraph.

Item 3, among other rejections, rejected claims 22-25 under Section 112, first paragraph as containing subject matter which was not [adequately] described in the specification, due to alleged lack of clarity regarding the meaning of the term "stainless steel-rich oxycarbonitrides layer". Applicants respectfully disagree with the allegation of lack of clarity.

Nevertheless, for reasons wholly unrelated to this rejection, claim 22 has been amended to no longer recite "stainless steel-rich oxycarbonitrides layer". Instead, claim 22 now recites "metal-rich metal oxycarbonitride layer", which is well-known terminology to those of ordinary skill in the art. Accordingly, the rejection of claims 22-25 under Section 112, first paragraph is made moot.

VI. Claims 1-15 (Item rest of 3): Section 112, 2nd Para.; "Substrate" Not Recited

Item 3 of the Office Action, among other rejections, rejected claims 1-15 under Section 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, Item 3 contended:

*Claim 1 appears incomplete in the absence of a substrate. If applicant intends a coating composition the claim should be so drafted. The examiner has taken the position that the coating is on a substrate.*

Applicants respectfully disagree with this rejection. Applicants respectfully submit that the term "coating" is not a difficult word and is already particular and distinct. Applicants further respectfully point out that, as indicated (e.g., by Applicants' Abstract), the coating itself, and not any substrate, is the main focus of some embodiments of Applicants' invention. Accordingly, claim 1 (as

amended and also before it was amended) should be allowable over Section 112, second paragraph.

Applicants respectfully submit that the rejection did not offer any explanation, reasoning or authority regarding why claim 1 "appears incomplete". Instead, the rejection seems to have fallen into the trap of being based merely on a stylistic preference. Applicants do respectfully appreciate the Examiner's careful review of the claims; however, Applicants respectfully believe that this rejection under Section 112, second paragraph should be withdrawn upon reconsideration.

Applicants respectfully point out that the Manual of Patent Examining Procedure (M.P.E.P.) § 2173.02 cautions that:

*"[t]he examiner's focus during examination of claims for compliance with the requirement for definiteness of 35 U.S.C. 112, second paragraph is whether the claim meets the threshold requirements of clarity and precision, not whether more suitable language or modes of expression are available."*

Further, M.P.E.P. § 2171 states that:

*If a rejection is based on 35 U.S.C. 112, second paragraph, the examiner should further explain whether the rejection is based on indefiniteness or on the failure to claim what applicants regard as their invention. Ex parte Ionescu, 222 USPQ 537, 539 (Bd. App. 1984).*

Thus, it is seen that the M.P.E.P. cautions that definiteness rejections should be based on the threshold question of clarity and precision, and not on whether alleged improvement is possible. Further, the M.P.E.P. states that an explanation is required of the basis of the rejection.

If the Examiner decides to maintain this rejection under Section 112, second paragraph, then Applicants respectfully request, first, more explanation, reasoning and authority to justify why claim 1 "appears incomplete" and, second, that the next office action be non-final, in order to give Applicants a fair opportunity to respond to the rejection, once it is properly stated according to the

M.P.E.P.'s standards. Again, Applicants thank the Examiner for his careful review of the claims.

## VII. Discussion of Some Cited References

### A. Gates

[\*A1] Gates discusses a tool coating for use in "cutting and wear applications". (Gates, Summary, col. 3, lines 50-51.) Gates simply does not teach or suggest that its coating could or should be used in non-cutting or non-tool applications. On the contrary, Gates discusses coated cutting inserts for use, for example, in a lathe-turning cutter and a single-tooth flycutter. (Gates, col. 11, lines 55-56, 60-61.) Gates, by repeatedly teaching only its cutting-tool application, might be said to teach away from applying its coating to non-cutting or non-tool applications.

[\*A2] Gates does not teach or suggest that its Example-7 coating is metal-rich. Instead, Gates teaches that its Example-7 coating is made by a high-temperature (1050° Celsius) chemical vapor deposition (CVD) process having low relative concentrations of Aluminium (0.8%  $\text{AlCl}_3$ ) and Zirconium (0.6%  $\text{ZrCl}_4$ ) and which involves stoichiometric ceramic compositions such as alumina ( $\text{Al}_2\text{O}_3$ ) (Gates, col. 12, lines 14-26). In a high-temperature CVD process using the ingredients of Gates' recipe, a metal-rich composition would not be expected. On the contrary, primarily stoichiometric compositions might be expected from Gates' high-temperature CVD process. Accordingly, it is seen that Gates teaches away from metal-richness in its Example-7 coating.

[\*A3] In Gates, only "Example 7" of Gates' coatings mentions Zirconium, and only the Example-7 coating was used in the Office Action's rejections. Gates does not teach or suggest that its Example-7 coating, or indeed any of its coatings, should be made using evaporation, arc deposition, or sputtering. On the contrary, Gates teaches that its Example-7 coating is to be "accomplished by chemical vapor deposition at 1050° (Celsius)". (Gates, col. 12, lines 14-15.)



Accordingly, it is seen that Gates teaches away from evaporation, arc deposition, or sputtering for forming its Example-7 coating.

[\*A4] Gates does not specifically mention the color of its Example-7 coating. In particular, Gates does not teach or suggest that its Example-7 coating, or indeed any of Gates' coatings, is (metallic) white. On the contrary, Gates at most describes the color of Gates' non-Example-7 coatings as being "Grayish yellow", "Gray with ... thin black rods", or "Off-white with ... slender black rods". (Gates, col. 11, Table I.) There is absolutely no reason to expect that Gates' Example-7 coating, which is not metal-rich, as made by Gates' high-temperature CVD recipe, would be (metallic) white. For example, consider some stoichiometric compositions that are or may be involved in the matrix of Gates' non-metal-rich Example-7 coating: zirconium nitride, aluminium nitride, zirconium carbide, or aluminium carbide. These compositions are all known in the art not to be (metallic) white. Thus, it is seen that at least the bulk matrix of Gates' Example-7 coating would be expected not to be white. Thus the color of Gates' mere sprinkling of embedded particulate alumina is moot. Accordingly, it is seen that, if anything, Gates actually teaches away from coating that has a (metallic) white color. In fact, even with respect to the moot question of the color of Gates' embedded particulate alumina, Gates teaches that its embedded particulate alumina is of a form that forms "black rods". (See Gates, Table I, and Gates, col. 12, lines 24-26, which refer to coatings described in Gates, Table I).

#### B. Schintlmeister

[\*B1] Schintlmeister teaches a coating that must contain an aluminium-boron oxide layer(s), among other layer(s). Generally, Schintlmeister is similar to Gates in many ways. The discussion above of Gates applies in large part also to Schintlmeister. Schintlmeister discusses "a wearing part" and "[m]ore particularly ... a cutting insert" that is coated and that is "employed in metal cutting work". (Schintlmeister, col. 1, lines 5-9.) Schintlmeister teaches that its coatings are formed using the CVD process. (Schintlmeister, col. 3, lines 54-56.) All temperatures discussed in Schintlmeister for CVD are high temperatures above

1000 degrees Celsius. (Schintlmeister, Examples.) Schintlmeister does not at all mention whiteness or color.

C. JP '750

[\*C1] As far as Applicants' undersigned representative can determine from the English-language abstract of JP '750, JP '750 does not mention zirconium and does not mention color. Instead, JP '750 teaches merely a coating of titanium-aluminum oxycarbonitride overlying a substrate. JP '750 does not teach or suggest that a substrate should be a metal-rich metal oxycarbonitride layer. On the contrary, JP '750 merely teaches that the substrate may be stainless steel or a cemented carbide or a ceramic sintered compact.

D. Nelson

[\*D1] Nelson teaches a coating for a magnetic-recording alloy thin film. Nelson does not mention or even suggest zirconium-aluminum oxycarbonitride. Nelson's coating is not a hard tool coating and is not a decorative coating. A magnetic-recording thin film makes intermittent feather-light contact with an extremely low-mass recording head in a clean, shielded and controlled environment. Such an environment and application is completely different from a cutting insert from Gates, Schintlmeister or the like that is used to hard-grind metal work pieces. Accordingly, it is seen that there is no suggestion or motivation whatsoever to combine the teachings of Nelson with the teachings of Gates or Schintlmeister or the like.

VIII. Discussion of Prior-Art Rejections of (Currently) Independent Claims

Claim 38 (Item 8):

Claim 38, prior to being amended, was rejected in Item 8 of the Office Action as being anticipated by the Example-7 coating from Gates.

Claim 38 has been amended to recite "the layer having a lower atomic concentration of aluminum than of zirconium". This limitation was a basis for the

allowability of claims 6-8, according to Item 21 of the Office Action. Accordingly, Applicants believe that Claim 38 is now allowable at least for similar reasons as is claim 6.

Claims 1, 16 (Item 5) and New Claim 45

Claim 1, prior to being amended, was rejected in Item 5 of the Office Action as being anticipated by the Example-7 coating from Gates. Claim 16, prior to being amended, was rejected in Item 5 of the Office Action as being anticipated by the Example-7 coating from Gates.

Claim 1, as amended, now recites a feature of a "metal-rich zirconium-aluminium oxycarbonitride". Claims 16 and 45 recite similar features. As has been explained (see VII.[\*A2] above), Gates does not teach that its coating is metal-rich. Accordingly, it is seen that Gates does not anticipate any of claims 1, 16 or 45.

Gates does not even suggest that its coating is metal-rich. In fact, as has been explained (see VII.[\*A2] above), Gates actually teaches against metal-richness, for example, by expressly teaching a recipe for a high-temperature CVD process that would not be expected to produce a metal-rich coating. Accordingly, it is seen that there would be no suggestion, motivation, or expectation of success for someone of ordinary skill in the art to somehow abandon Gates' expressly-taught coating to somehow obtain a very different coating according to claims 1, 16 or 45. Accordingly, Applicants respectfully submit that claims 1, 16 and 45 are allowable.

Claim 2 (Item 11) and New Claim 50

Claim 2 was rejected under Section 103(a) in Item 11 of the Office Action as being unpatentable over Gates as applied to claim 1, and further in view of the Government Paper Standard.

Claim 2 has been amended to put it into independent form and to make typographical changes. Claim 2 recites "a CIELAB color of 'L' of at least about

76, 'a]' of at most about one, and 'b]' of at most about five". New claim 50 recites a similar CIELAB feature.

In rejecting Claim 2, Item 11 of the Office Action conceded that "Gates does not specify the CIELAB value". Applicants agree that Gates does not specify the CIELAB value of its Example-7 and other coatings.

Item 11 the Office Action contended, however, that:

*... the CIELAB coordinates for a white coating ... [is] taught in the [Government Paper Standard.] ... [and the] examiner takes the position that the coating of Gates has the CIELAB coordinates as claimed, since the claimed coating is also white according to the specification (Section [0005])*

Applicants are very confused by the above-quoted reasoning from the Office Action. In particular, Applicants respectfully point out that the above-quoted reasoning from the Office Action has not in any way even made the threshold allegation that Gates' coating is a white coating. Therefore, given that Gates' coating is not asserted to be a white coating, then the definition of white according to the Government Paper Standard is completely not relevant. Accordingly, it is seen that the Office Action has not stated a prima facie case of obviousness.

Given that a prima facie case of obviousness has not been stated, Applicants are entitled to state that claim 2 is allowable. Nevertheless, in order to speed prosecution of the current claims, Applicants proactively point out that, as has been explained (see VII.[\*A4] above), Gates does not teach or even suggest that its coating is a white coating. In fact, if anything, Gates actually teaches away from a coating having a (metallic) white color, by teaching a particular coating that, without contrary description, would be expected to contain a matrix of stoichiometric non-white compositions (and, incidentally, embedded with particulates that are taught to form "black rods"). Accordingly, Applicants respectfully submit that independent claims 2 and 50 are allowable.

Claims 22, 18, 26, 40 (Items 7, 6, 9)

Claim 22, prior to being amended, was rejected in Item 7 of the Office Action under Section 102(b) as being anticipated by JP'750. Claims 18 and 26 were rejected in Items 6 of the Office Action, and claim 40 was rejected in Item 9 of the Office Action, all under Section 102(b) as being anticipated by Schintlmeister.

Claim 22 has been amended to recite "an overlayer comprising aluminium or metal-rich aluminium oxycarbonitride or aluminium-zirconium oxycarbonitride, the overlayer overlying a metal-rich metal oxycarbonitride layer".

In rejecting claim 22, Item 7 of the Office Action states: "JP'750 teaches a[n] Al-Ti CNO layer overlying a stainless steel layer (Translated Abstract)". The question of whether the stainless steel substrate of JP'750 actually constitutes a "layer" can be considered moot, given that JP'750 does not teach claim 22's "metal-rich metal oxycarbonitride layer", as has been explained (see VII.[\*C1] above). On the contrary, JP'750 merely teaches a substrate of stainless steel or a cemented carbide or a ceramic sintered compact. Further, there is simply no suggestion or motivation to modify the teaching of JP'750 by making replacing JP'750's substrate with a layer according to claim 22. Accordingly, Applicants respectfully submit that claim 22 is allowable.

Claim 18 recites "a metal-rich zirconium oxycarbonitride layer". Claim 26 recites that "the underlayer comprises metal-rich oxycarbonitride", and claim 40 recites "forming a layer of an underlayer, comprising metal-rich oxycarbonitride, over the substrate".

As has been explained (see VII.[\*B1] and [\*A2]) Schintlmeister, like Gates, does not teach any metal-rich oxycarbonitride layer. On the contrary, Schintlmeister, like Gates, teaches only high-temperature CVD processes that would not be expected to form any metal-rich oxycarbonitride layer. In fact, Schintlmeister thereby teaches away from a metal-rich oxycarbonitride layer. Accordingly, Applicants respectfully submit that claims 26 and 40 are allowable.

IX. Discussion of Prior-Art Rejections of (Currently) Dependent Claims

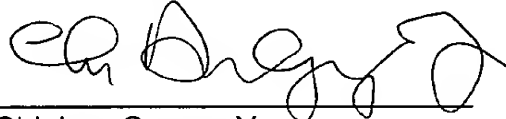
The independent claims 1, 2, 6, 7, 8, 16, 18, 22, 26, 38, 40, 45 and 50 have been shown above to be allowable. All remaining claims, 3-5, 9-15, 17, 19-21, 23-25, 27-37, 39, 41-44, 46-49 and 51-58, depend upon and include all features of their respective base claims. Accordingly, Applicants respectfully submit that all dependent claims are allowable at least for the same reasons as are their respective base claims. Furthermore, the dependent claims are further allowable by virtue of the features that they themselves recite, and by the combination of those features with features of their respective parent claim(s).

In general, assertions in the Office Action regarding the dependent claims are now moot, in view of the above amendments and remarks, and Applicants do not agree with the assertions. At least many of the assertions are easily seen to be refuted by preceding discussion.

CONCLUSION

In view of the amendments and remarks above, Applicants believe that all claims are allowable over the cited art. Accordingly, Applicants respectfully request that the application be passed to allowance, after reconsideration by the Examiner. If the Examiner has any questions, or believes that discussion would be beneficial, he is invited to telephone Applicants' undersigned representative.

Respectfully submitted,



Chiahua George Yu  
Attorney for Applicant(s)  
Reg. No. 43,301  
Phone: (408) 739-4518  
Fax: (408) 739-2300

Dated: September 15, 2003

Correspondence Address:  
Law Offices of C. George Yu  
1250 Oakmead Parkway  
Suite 210  
Sunnyvale, CA 94085